Scenario: #1 - Grass/legume mix-normal tillage

# **Scenario Description:**

Establishment of permanent vegetation on a site that is void or nearly void of vegetation due to a natural occurrence or a newly constructed conservation practice. Costs include seedbed preparation with typical tillage implements, grass/legume seed, companion crop, and fertilizer and lime with application.

#### **Before Situation:**

Areas that are void or nearly void of vegetation, resulting in bare soil being exposed to erosive processes. The exposed areas may be caused from recent natural occurrences (fire, flood, wind, etc.) or due to newly constructed conservation practices such as waterways, terraces, water and sediment basins or dams. The exposed areas will be subject to wind erosion, sheet and rill erosion, or visible rills may have already occurred. Runoff from the area flows into streams, water courses or other water bodies causing degradation to the receiving waters. The soil typically has a pH imbalance and low fertility.

#### **After Situation:**

This typical 1.0 acre critical area is stabilized by applying fertilizer, lime and seed. Soil amendments will be incorporated at an depth of six inches to improve fertility and ensure establishment of permanent vegetative cover. Apply 30 lbs of nitrogen, 60 lbs of phosphate, and 60 lbs of potash, along with an application of 2 tons of lime. Prepare a firm, weed free seedbed so that proper germination and stand establishment are ensured. Once the seedbed has been prepared, drill the following mixture for a vegetative cover: Smooth Bromegrass (15 lbs/ac), and Red Clover (8 lbs/ac) with a nurse crop of oats at a seeding rate of 48 lbs per acre.

Scenario Feature Measure: area seeded

Scenario Unit: Acre

Scenario Typical Size: 1

Scenario Cost: \$250.57 Scenario Cost/Unit: \$250.57

Cost Details (by category	/):			Price		
Component Name	ID	Component Description	Unit	(\$/unit)	Quantity	Cost
Equipment/Installation						
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acre	\$10.31	2	\$20.62
Fertilizer, ground application, dry bulk		Dry bulk fertilizer application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	\$6.28	1	\$6.28
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acre	\$19.75	1	\$19.75
Cultipacking	1100	Includes equipment, power unit and labor costs.	Acre	\$7.82	1	\$7.82
Materials						
Lime, ENM	75	Fertilizer: Limestone Spread on field.	Ton	\$43.54	2	\$87.08
One Species, Warm Season, Introduced Perennial Grass (seed or sprigs)	2323	Native, warm season perennial grass seed or sprig. Includes material and shipping only.	Acre	\$59.62	1	\$59.62
Nitrogen (N), Urea		Price per pound of N supplied by Urea. Price is not per pound of total product applied, no conversion is needed.	Pound	\$0.58	30	\$17.40
Phosphorus, P2O5		Price per pound of P2O5 supplied by Superphosphate. Price is not per pound of total product applied, no conversion is needed.	Pound	\$0.34	50	\$17.00
Potassium, K2O		K2O supplied by Muriate Of Potash. Price is not per pound of total product applied, no conversion is needed.	Pound	\$0.30	50	\$15.00

Scenario: #2 - Organic Grass/legume mix-normal tillage

# **Scenario Description:**

Establishment of permanent vegetation on a site that is void or nearly void of vegetation due to a natural occurrence or a newly constructed conservation practice. Costs include seedbed preparation with typical tillage implements, grass/legume seed, companion crop, and fertilizer and lime with application. Certified organic seed and fertilizer based upon NOP approved fertilizer inputs will be used where available.

#### **Before Situation:**

Areas that are void or nearly void of vegetation, resulting in bare soil being exposed to erosive processes. The exposed areas may be caused from recent natural occurrences (fire, flood, etc) or due to newly constructed conservation practices such as waterways, terraces, water and sediment basins or dams. The exposed areas will be subject to wind erosion, sheet and rill erosion, or visible rills may have already occurred. Runoff from the area flows into streams, water courses or other water bodies causing degradation to the receiving waters. The soil typically has a pH imbalance and low fertility.

# **After Situation:**

This typical 1.0 acre critical area is stabilized by applying fertilizer, lime and seed. Soil amendments will be incorporated at an depth of six inches to improve fertility and ensure establishment of permanent vegetative cover. The plant nutrients will supplied by a blend of organic soil amendments. Apply 30 lbs of nitrogen, 60 lbs of phosphate, and 60 lbs of potash, along with an application of 2 tons of lime. Prepare a firm, weed free seedbed so that proper germination and stand establishment are ensured. Once the seedbed has been prepared, drill the following mixture for a vegetative cover: Smooth Bromegrass (15 lbs/ac) and Red Clover (8 lbs/ac) with a nurse crop of oats at a seeding rate of 48 lbs per acre. Organic seed will be used where available. Manure may be used in lieu of a commercially blended product as long as the manure is tested and the correct quantity of manure is calculated such that the specified 30-60-60 N-P2O5-K2O requirement is met.

Scenario Feature Measure: area seeded

Scenario Unit: Acre

Scenario Typical Size: 1

Scenario Cost: \$236.27 Scenario Cost/Unit: \$236.27

Cost Details (by category):

cost Betans (by category).				Price		
Component Name	ID	Component Description	Unit	(\$/unit)	Quantity	Cost
Equipment/Installation						
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acre	\$10.31	2	\$20.62
Fertilizer, ground application, dry bulk	950	Dry bulk fertilizer application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	\$6.28	1	\$6.28
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acre	\$19.75	1	\$19.75
Cultipacking	1100	Includes equipment, power unit and labor costs.	Acre	\$7.82	1	\$7.82
Materials						
One Species, Warm Season, Introduced Perennial Grass (seed or sprigs)	2323	Native, warm season perennial grass seed or sprig. Includes material and shipping only.	Acre	\$59.62	1	\$59.62
Phosphorus, Organic	267	ORGANIC Phosphorus	Pound	\$0.27	50	\$13.50
Nitrogen, Organic	266	ORGANIC Nitrogen	Pound	\$0.27	30	\$8.10
Lime, ENM	75	Fertilizer: Limestone Spread on field.	Ton	\$43.54	2	\$87.08
Potassium, Organic	268	ORGANIC Potassium	Pound	\$0.27	50	\$13.50

Scenario: #3 - Native seeding - normal tillage

# **Scenario Description:**

Establishment of permanent vegetation on a site that is void or nearly void of vegetation due to a natural occurrence or a newly constructed conservation practice. Costs include seedbed preparation with typical tillage implements, native grass seed, and fertilizer and lime with application.

#### **Before Situation:**

Areas that are void or nearly void of vegetation, resulting in bare soil being exposed to erosive processes. The exposed areas may be caused from recent natural occurrences (fire, flood, etc) or due to newly constructed conservation practices such as waterways, terraces, water and sediment basins or dams. The exposed areas will be subject to wind erosion, sheet and rill erosion, or visible rills may have already occurred. Runoff from the area flows into streams, water courses or other water bodies causing degradation to the receiving waters. The soil typically has a pH imbalance and low fertility.

#### **After Situation:**

This typical 1.0 acre critical area is stabilized by applying fertilizer, lime and seed. Soil amendments will be incorporated at an depth of six inches to improve fertility and ensure establishment of permanent vegetative cover. Apply 60 lbs of phosphate and 60 lbs of potash, along with an application of 2 tons of lime. Prepare a firm, weed free seedbed so that proper germination and stand establishment are ensured. Once the seedbed has been prepared, drill the following mixture for a vegetative cover: Big Bluestem (14 lbs/ac) and Switchgrass (2 lbs/ac) with a nurse crop of oats at a seeding rate of 32 lbs per acre.

Scenario Feature Measure: area seeded

Scenario Unit: Acre

Scenario Typical Size: 1

Scenario Cost: \$239.53 Scenario Cost/Unit: \$239.53

Cost Details (by category	'):			Price		
Component Name	ID	Component Description	Unit	(\$/unit)	Quantity	Cost
Equipment/Installation	_					
Cultipacking	1100	Includes equipment, power unit and labor costs.	Acre	\$7.82	1	\$7.82
Seeding Operation, No Till/Grass Drill		No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acre	\$19.75	1	\$19.75
Fertilizer, ground application, dry bulk		Dry bulk fertilizer application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	\$6.28	1	\$6.28
Tillage, Light		Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acre	\$10.31	2	\$20.62
Materials						
Lime, ENM	75	Fertilizer: Limestone Spread on field.	Ton	\$43.54	2	\$87.08
Potassium, K2O		K2O supplied by Muriate Of Potash. Price is not per pound of total product applied, no conversion is needed.	Pound	\$0.30	50	\$15.00
Phosphorus, P2O5		Price per pound of P2O5 supplied by Superphosphate. Price is not per pound of total product applied, no conversion is needed.	Pound	\$0.34	50	\$17.00
One Species, Warm Season, Native Perennial Grass		Native, warm season perennial grass. Includes material and shipping only.	Acre	\$65.98	1	\$65.98

Scenario: #4 - Grass/legume mix-moderate grading

# **Scenario Description:**

Establishment of permanent vegetation on a site that is void or nearly void of vegetation due to a natural or human disturbance. Costs include a dozer for grading and shaping of small gullies, seedbed preparation with typical tillage implements, grass/legume seed, companion crop, and fertilizer and lime with application.

#### **Before Situation:**

Areas that are void or nearly void of vegetation, resulting in bare soil being exposed to erosive processes. The exposed areas may be caused from natural occurrences (fire, flood, etc) or human disturbance. The exposed areas have visible rills and small gullies averaging 1 foot in depth and 1 foot in width. Runoff from the area flows into streams, water courses or other water bodies causing degradation to the receiving waters. The soil typically has a pH imbalance and low fertility.

#### **After Situation:**

This typical 1.0 acre critical area is stabilized by grading and shaping the small gullies with a dozer (4 hours) and then applying fertilizer, lime and seed. Soil amendments will be incorporated at an depth of six inches to improve fertility and ensure establishment of permanent vegetative cover. Apply 30 lbs of nitrogen, 60 lbs of phosphate, and 60 lbs of potash, along with an application of 2 tons of lime. Prepare a firm, weed free seedbed so that proper germination and stand establishment are ensured. Once the seedbed has been prepared, drill the following mixture for a vegetative cover: Smooth Bromegrass (15 lbs/ac) and Red Clover (8 lbs/ac) with a nurse crop of oats at a seeding rate of 48 lbs per acre.

Scenario Feature Measure: area seeded

Scenario Unit: Acre

Scenario Typical Size: 1

Scenario Cost: \$605.65 Scenario Cost/Unit: \$605.65

Cost Details (by category): Price **Component Name Component Description** Unit **Quantity Cost** (\$/unit) 1144 1 Equipment/Installation \$262.72 Dozer, 80 HP 929 Track mounted Dozer with horsepower range of 60 to 90. Hour \$65.68 4 Equipment and power unit costs. Labor not included. Tillage, Light 945 Includes light disking (tandem) or field cultivator. Includes Acre \$10.31 2 \$20.62 equipment, power unit and labor costs. 950 Dry bulk fertilizer application performed by ground \$6.28 1 \$6.28 Fertilizer, ground application, Acre dry bulk equipment. Includes equipment, power unit and labor costs. Seeding Operation, No 960 No Till drill or grass drill for seeding. Includes equipment, 1 \$19.75 \$19.75 Acre Till/Grass Drill power unit and labor costs. Cultipacking 1100 Includes equipment, power unit and labor costs. \$7.82 1 \$7.82 Acre Labor Hour \$92.36 Equipment Operators, Heavy 233 Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, \$23.09 4 Paving Machines, Rock Trenchers, Trenchers >=12", Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons. Materials \$0.30 50 \$15.00 Potassium, K2O 74 K2O supplied by Muriate Of Potash. Price is not per pound | Pound of total product applied, no conversion is needed. 75 Fertilizer: Limestone Spread on field. Ton \$43.54 \$87.08 Lime, ENM Nitrogen (N), Urea 71 Price per pound of N supplied by Urea. Price is not per Pound \$0.58 30 \$17.40 pound of total product applied, no conversion is needed. 50 \$17.00 Phosphorus, P2O5 73 Price per pound of P2O5 supplied by Superphosphate. Pound \$0.34 Price is not per pound of total product applied, no conversion is needed. One Species, Warm Season, 2323 Native, warm season perennial grass seed or sprig. Acre \$59.62 1 \$59.62 Introduced Perennial Grass Includes material and shipping only. (seed or sprigs)

Scenario: #5 - Native seeding-moderate grading

# **Scenario Description:**

Establishment of permanent vegetation on a site that is void or nearly void of vegetation due to a natural or human disturbance. Costs include a dozer for grading and shaping of small gullies, seedbed preparation with typical tillage implements, native grass seed, companion crop, and fertilizer and lime with application.

#### **Before Situation:**

Areas that are void or nearly void of vegetation, resulting in bare soil being exposed to erosive processes. The exposed areas may be caused from natural occurrences (fire, flood, etc) or human disturbance. The exposed areas have visible rills and small gullies averaging 1 foot in depth and 1 foot in width. Runoff from the area flows into streams, water courses or other water bodies causing degradation to the receiving waters. The soil typically has a pH imbalance and low fertility.

#### **After Situation:**

This typical 1.0 acre critical area is stabilized by grading and shaping the small gullies with a dozer (4 hours) and then applying fertilizer, lime and seed. Soil amendments will be incorporated at an depth of six inches to improve fertility and ensure establishment of permanent vegetative cover. Apply 60 lbs of phosphate and 60 lbs of potash, along with an application of 2 tons of lime. Prepare a firm, weed free seedbed so that proper germination and stand establishment are ensured. Once the seedbed has been prepared, drill the following mixture for a vegetative cover: Big Bluestem (14 lbs/ac) and Switchgrass (2 lbs/ac) with a nurse crop of oats at a seeding rate of 32 lbs per acre.

Scenario Feature Measure: area seeded

Scenario Unit: Acre

Scenario Typical Size: 1

Scenario Cost: \$594.61 Scenario Cost/Unit: \$594.61

Cost Details (by category): Price **Component Name Component Description** Unit **Quantity Cost** (\$/unit) 1144 1 Equipment/Installation Dozer, 80 HP 929 Track mounted Dozer with horsepower range of 60 to 90. Hour \$65.68 4 \$262.72 Equipment and power unit costs. Labor not included. Cultipacking 1100 Includes equipment, power unit and labor costs. Acre \$7.82 1 \$7.82 960 No Till drill or grass drill for seeding. Includes equipment, 1 \$19.75 Seeding Operation, No Acre \$19.75 Till/Grass Drill power unit and labor costs. 1 \$6.28 Fertilizer, ground application, 950 Dry bulk fertilizer application performed by ground Acre \$6.28 dry bulk equipment. Includes equipment, power unit and labor costs. Tillage, Light 945 Includes light disking (tandem) or field cultivator. Includes \$10.31 \$20.62 Acre equipment, power unit and labor costs. Labor Equipment Operators, Heavy 233 Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Hour \$23.09 4 \$92.36 Paving Machines, Rock Trenchers, Trenchers >=12", Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons. Materials \$87.08 Lime, ENM 75 Fertilizer: Limestone Spread on field. Ton \$43.54 74 K2O supplied by Muriate Of Potash. Price is not per pound 50 Potassium, K2O Pound \$0.30 \$15.00 of total product applied, no conversion is needed. Phosphorus, P2O5 73 Price per pound of P2O5 supplied by Superphosphate. Pound \$0.34 50 \$17.00 Price is not per pound of total product applied, no conversion is needed. 2322 Native, warm season perennial grass. Includes material \$65.98 One Species, Warm Season, Acre \$65.98 Native Perennial Grass and shipping only.

Scenario: #6 - Grass/legume mix-heavy grading

# **Scenario Description:**

Establishment of permanent vegetation on a site that is void or nearly void of vegetation due to a natural or human disturbance. Costs include a dozer for grading and shaping of moderate to severe gullies, seedbed preparation with typical tillage implements, grass/legume seed, companion crop, and fertilizer and lime with application.

#### **Before Situation:**

Areas that are void or nearly void of vegetation, resulting in bare soil being exposed to erosive processes. The exposed areas may be caused from natural occurrences (fire, flood, etc) or human disturbance. The exposed areas have visible rills and moderate to severe gullies averaging 3 feet in depth and 3 feet in width. Runoff from the area flows into streams, water courses or other water bodies causing degradation to the receiving waters. The soil typically has a pH imbalance and low fertility.

#### **After Situation:**

This typical 1.0 acre critical area is stabilized by grading and shaping the moderate to severe gullies with a dozer (8 hours) and then applying fertilizer, lime and seed. Soil amendments will be incorporated at an depth of six inches to improve fertility and ensure establishment of permanent vegetative cover. Apply 30 lbs of nitrogen, 60 lbs of phosphate, and 60 lbs of potash, along with an application of 2 tons of lime. Prepare a firm, weed free seedbed so that proper germination and stand establishment are ensured. Once the seedbed has been prepared, drill the following mixture for a vegetative cover: Smooth Bromegrass (15 lbs/ac) and Red Clover (8 lbs/ac) with a nurse crop of oats at a seeding rate of 48 lbs per acre.

Scenario Feature Measure: area seeded

Scenario Unit: Acre

Scenario Typical Size: 1

Scenario Cost: \$960.73 Scenario Cost/Unit: \$960.73

Cost Details (by category):						
Component Name	ID	Component Description	Unit	(\$/unit)	Quantity	Cost
	1144				1	
Equipment/Installation						
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acre	\$10.31	2	\$20.62
Cultipacking	1100	Includes equipment, power unit and labor costs.	Acre	\$7.82	1	\$7.82
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acre	\$19.75	1	\$19.75
Fertilizer, ground application, dry bulk	950	Dry bulk fertilizer application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	\$6.28	1	\$6.28
Dozer, 80 HP	929	Track mounted Dozer with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hour	\$65.68	8	\$525.44
Labor						
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12", Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hour	\$23.09	8	\$184.72
Materials	•		•			•
Lime, ENM	75	Fertilizer: Limestone Spread on field.	Ton	\$43.54	2	\$87.08
Potassium, K2O	74	K2O supplied by Muriate Of Potash. Price is not per pound of total product applied, no conversion is needed.	Pound	\$0.30	50	\$15.00
Phosphorus, P2O5	73	Price per pound of P2O5 supplied by Superphosphate. Price is not per pound of total product applied, no conversion is needed.	Pound	\$0.34	50	\$17.00
One Species, Warm Season, Introduced Perennial Grass (seed or sprigs)	2323	Native, warm season perennial grass seed or sprig. Includes material and shipping only.	Acre	\$59.62	1	\$59.62
Nitrogen (N), Urea	71	Price per pound of N supplied by Urea. Price is not per pound of total product applied, no conversion is needed.	Pound	\$0.58	30	\$17.40

Scenario: #7 - Native seeding-heavy grading

# **Scenario Description:**

Establishment of permanent vegetation on a site that is void or nearly void of vegetation due to a natural or human disturbance. Costs include a dozer for grading and shaping of moderate to severe gullies, seedbed preparation with typical tillage implements, grass/legume seed, companion crop, and fertilizer and lime with application.

#### **Before Situation:**

Areas that are void or nearly void of vegetation, resulting in bare soil being exposed to erosive processes. The exposed areas may be caused from natural occurrences (fire, flood, etc) or human disturbance. The exposed areas have visible rills and moderate to severe gullies averaging 3 feet in depth and 3 feet in width. Runoff from the area flows into streams, water courses or other water bodies causing degradation to the receiving waters. The soil typically has a pH imbalance and low fertility.

#### **After Situation:**

This typical 1.0 acre critical area is stabilized by grading and shaping the moderate to severe gullies with a dozer (8 hours) and then applying fertilizer, lime and seed. Soil amendments will be incorporated at an depth of six inches to improve fertility and ensure establishment of permanent vegetative cover. Apply 60 lbs of phosphate and 60 lbs of potash, along with an application of 2 tons of lime. Prepare a firm, weed free seedbed so that proper germination and stand establishment are ensured. Once the seedbed has been prepared, drill the following mixture for a vegetative cover: Big Bluestem (14 lbs/ac) and Switchgrass (2 lbs/ac) with a nurse crop of oats at a seeding rate of 32 lbs per acre.

Scenario Feature Measure: area seeded

Scenario Unit: Acre

Scenario Typical Size: 1

Scenario Cost: \$1,201.67 Scenario Cost/Unit: \$1,201.67

Cost Details (by category): Price **Component Name Component Description** Unit **Quantity Cost** (\$/unit) 1144 1 Equipment/Installation Seeding Operation, No 960 No Till drill or grass drill for seeding. Includes equipment, Acre \$19.75 1 \$19.75 Till/Grass Drill power unit and labor costs. Cultipacking 1100 Includes equipment, power unit and labor costs. Acre \$7.82 1 \$7.82 929 Track mounted Dozer with horsepower range of 60 to 90. Dozer, 80 HP Hour \$65.68 8 \$525.44 Equipment and power unit costs. Labor not included. 2 \$20.62 Tillage, Light 945 Includes light disking (tandem) or field cultivator. Includes Acre \$10.31 equipment, power unit and labor costs. Fertilizer, ground application, 950 Dry bulk fertilizer application performed by ground \$6.28 1 \$6.28 Acre dry bulk equipment. Includes equipment, power unit and labor costs. Hour \$184.72 Equipment Operators, Heavy 233 Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, \$23.09 Paving Machines, Rock Trenchers, Trenchers >=12", Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons. Materials \$0.34 50 \$17.00 Phosphorus, P2O5 73 Price per pound of P2O5 supplied by Superphosphate. Pound Price is not per pound of total product applied, no conversion is needed. 2322 Native, warm season perennial grass. Includes material 1 \$65.98 One Species, Warm Season, Acre \$65.98 Native Perennial Grass and shipping only. Potassium, K2O 74 K2O supplied by Muriate Of Potash. Price is not per pound Pound \$0.30 50 \$15.00 of total product applied, no conversion is needed. Lime, ENM 75 Fertilizer: Limestone Spread on field. Ton \$43.54 \$87.08 Mobilization 1 \$251.98 Mobilization, medium 1139 Equipment with 70-150 HP or typical weights between Each \$251.98 14,000 and 30,000 pounds. equipment